

Husbandry and Care of Elephants (Chapter 30, ZOOKEEPING)

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Introduction

On the internet there is an abundance of information on elephants. In fact, if you search for the word "elephants" you will get more than 11 million results. Granted, the results cover everything from natural history to elephants in human care to elephant collectibles. As with any other subject, some of the information is excellent and some is less than credible. The purpose of this chapter is to provide an entry-level zookeeper with an overall view of elephant management. Please note that the complexities and diversity of elephant management cannot be covered in one chapter, or even in a complete book on the subject. Sometimes it seems that there are as many ways to care for elephants as there are internet results. Most novice keepers spend two years in an apprentice program before they become proficient as elephant keepers. Each institutions elephant management program varies and must meet the institutions individual goals and needs. There are many ways to care for elephants, but it is critical that each institution has the behavior components necessary for a successful program, such as those presented in the Association of Zoos and Aquariums (AZA) course Principles of Elephant Management.

After studying this chapter, readers will understand

- anatomical adaptations of elephants
- effects of elephant biology on housing, nutrition, and social management
- basic components of elephant behavior as they relate to animal and keeper safety
- practices for promoting species-appropriate behaviors
- management methods for elephants.

Natural History

The first thing any prospective keeper needs to learn about elephants is their natural history. African and Asian elephants are two distinct species which belong to separate genera. They are generally similar to each other in size, appearance, physiology, and social behavior. The Asian elephant is considered to be a single species, *Elephas maximus*, with four extant subspecies: *E.m. hirsutus* (Malayan elephant), *E.m. indicus* (Indian elephant), *E.m. maximus* (Sri Lankan elephant), and *E.m. sumatranus* (Sumatran elephant). The African elephant is considered to be a single species, *Loxodonta africana*, with two subspecies: *L.a. cydotis* (forest elephant) and *L.a. africana* (savanna elephant). Viewed in depth, elephant herd structure is complicated, but put simply it is a matriarchal herd structure. Mother, daughters, and their offspring make up the basic family group, usually led by the oldest female. Males leave the group when they approach sexual maturity and are solitary or form loosely structured male herds.

The African elephant is the largest living land mammal, with the Asian elephant coming in as a close second. The males are larger than the females, and both sexes continue to grow throughout their lives. The African elephant has larger ears than the Asian. In both species, the ears are used for communication, behavioral and auditory, and in regulating body temperature. The tusks are upper incisors that grow throughout the elephant's life. Both male and female African elephants can have tusks, while it is usually only the male Asian elephant that carries large tusks. The female Asian elephant's tusks, called "tushes," seldom extend beyond the upper lip. In both species, "tuskless" elephants have been observed.

The trunk is an elongated nose combined with the upper lip. The elephant uses it to breathe, explore its environment, communicate with conspecifics, pick up, push, carry, drink water, and give itself a shower of water, mud, or dirt. The trunk is important to the elephant's survival, although some elephants are able to successfully adapt their feeding and drinking behavior after severe trunk injuries. The tip of the trunk of the African elephant has two finger-like projections, while the Asian elephant's trunk has only one.

The feet of both species of elephants are round, with a circumference larger than that of the legs. The elephant's weight rests on a pad, which cushions the toes. This pad grows continuously and is worn down by the elephant's natural movement. The number of toenails on both species of elephants may vary by individual. Typically, Asian elephants have five toenails on each forefoot and four on each hindfoot. The African elephant has four toenails on each forefoot and three or four on each hindfoot.

Zookeeping

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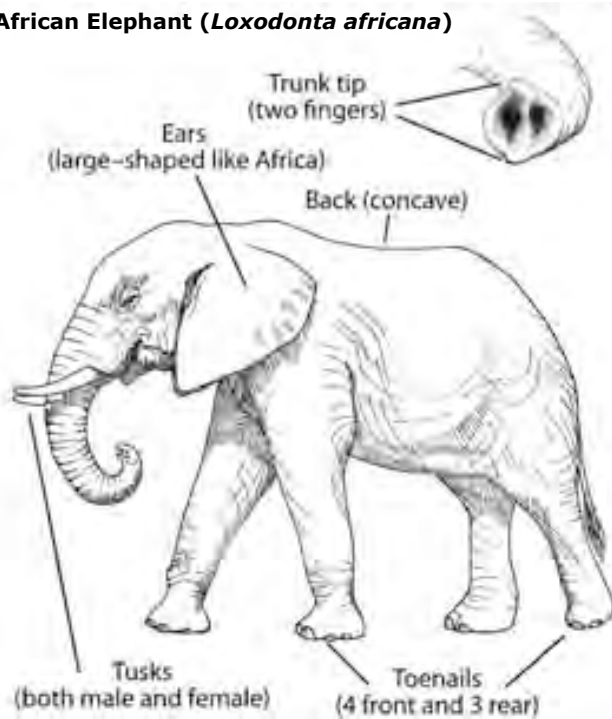
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1. African Elephant (*Loxodonta africana*)



2. Asian Elephant (*Elephas maximus*)

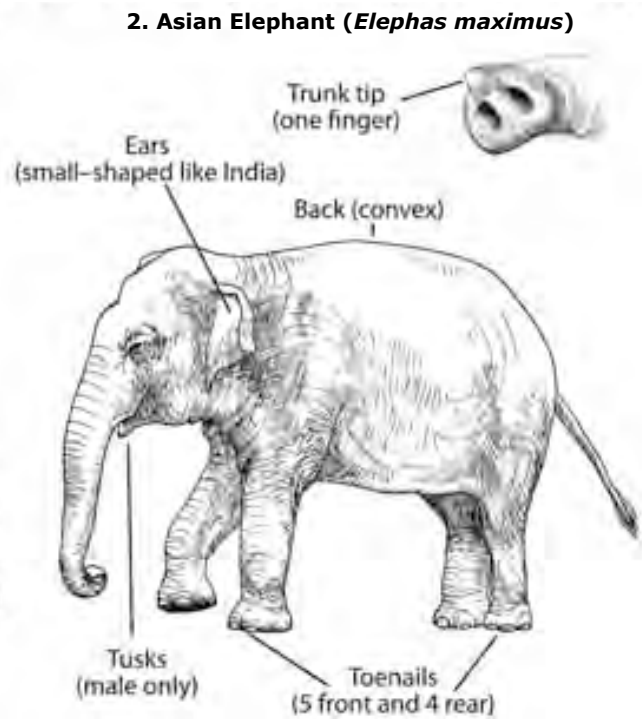


Figure 30.1. Basic anatomical features of elephants: (1) African elephant; (2) Asian elephant. Illustrations by Kate Woodle, www.katewoodleillustration.com.

The Zoo Environment

Elephants need contact with other elephants to develop species-appropriate social behavior. They need sufficient space to interact with conspecifics, as well as the means to exercise. The zoo enclosure must be appropriate for the climate and provide protection from the elements. It must provide the means to secure the elephants, safely meet the goals and needs of the elephant training program, and provide for the safety of the elephants and staff.

It is recommended by North America's AZA that all facilities maintaining and breeding elephants provide separate enclosures for the males. The North American population of both the Asian and African elephants is not self-sustaining, so increased breeding efforts are needed. Increased efforts require many more facilities to house adult male elephants for breeding, as well as to provide space to house the male calves that will result from increased reproduction. Adult bull elephants must be housed in facilities that have elephant restraint devices and staff with experience in caring for male elephants. This is especially important when bull elephants are in "musth". Musth is an intermittent period of elevated testosterone hormone levels, which usually produces erratic and aggressive behavior. Elephants often become unresponsive to commands while in musth.

Indoor Housing

Every elephant-holding facility in North America is required to have indoor housing of some type. Facilities should be able to maintain an indoor temperature of at least 12.8 degrees Celsius (55 degrees Fahrenheit) during cold weather. For very young, sick, and/or debilitated animals, at least one

room of the indoor facility should be able to be maintained at 21.1 degrees Celsius (70 degrees Fahrenheit).

Indoor space can be designed as individual or group stalls. Each stall should provide adequate room for the elephant(s) to move about freely and lie down without restrictions. Each facility must take into consideration its climate, herd composition, and compatibility; the needs of its elephant management program; and that program's future objectives when determining the stall sizes most appropriate for their elephants. The AZA Standards for Elephant Management and Care (2011) require a space not less than 56 sq m (600 sq ft.) for males or females with calves, and not less than 37 sq m (400 sq. ft.) for females.

Floors should be impervious to water; they should drain rapidly and dry adequately to prevent chronic damp conditions or standing water. A recommended slope is 6 mm per 30 cm (about 1/4 in. per ft.), which is equal to 13 cm of slope per 6 m (about 5 in. of slope per 20 ft.) of floor. A minimum recommended drain circumference is 20 cm (about 8 in.). Rubber flooring, sand stalls, and alternate bedding are being used and investigated for the cushioning of floor surfaces.

Ambient light cycles are generally appropriate for elephants. Indoor areas should be well-illuminated during daylight hours, followed by a dark period with a night light to simulate moonlight so that animals are not in complete darkness. Good lighting in the elephant stalls and staff workspace is required for both elephant comfort and keeper safety. Natural lighting provided by an ample number of skylights

and/or windows, in conjunction with artificial lighting that provides a broad spectrum of illumination, is recommended for use in indoor holding areas. Timers are recommended in areas of short winter days to extend the day length.

Proper ventilation is very important for the elephant's health. Ventilation should exchange the heavier humidified air quickly, maintain a constant temperature, eliminate some of the odor, and not promote drafts. Indoor facility ventilation should be provided to accommodate at least four air exchanges per hour.

Other considerations include a closed-circuit video monitoring system that is capable of recording several days' events at a time. It is favorable for such camera systems to be monitored from remote locations such as the homes and offices of keepers and veterinarians. Built-in scales for weighing elephants should be in every barn, in a location where the elephants have to walk on them daily. These scales should have a weight capacity of up to 6,800 kg (about 15,000 lbs.). Barns should contain equipment sufficient to lift and support an elephant in the event of an emergency. The hoist should be mobile and should access as much of the barn as possible. It must have a lifting capacity of at least 6,800 kg (about 15,000 lbs.). An elephant restraint device (ERD) is a required for all facilities housing adult male elephants, and is also strongly recommended for facilities with intractable females. The ERD should be in a location where the elephants have to walk through it daily, and every elephant should be comfortable being restrained in it. It should have multiple access doors, and a moving wall is a definite benefit if further restraint is necessary. Every elephant barn should allow access to a stall area with an elephant transport trailer, as well as vehicle access into the indoor facility and outside exhibit yard for exhibit maintenance.

Outdoor Housing

Each facility should have a large communal yard, to encourage species-appropriate behaviors and stimulate exercise, and a separate enclosure for mature male elephants. An additional holding yard or yards should be available, preferably adjacent to the large communal yard, in case there is a need to separate elephants due to aggression, illness, introductions, or a female with a new calf.

Outside yards should be as large as possible, so that the elephants can move about freely and individuals can separate themselves from the herd if they so desire. AZA Standards for Elephant Care (2011) require a minimum of 500 sq m (5,400 sq. ft.) per elephant in the habitat. Yard elevation should provide drainage but not be so steep that the elephants have difficulty walking or using the entire area. The yard surfaces must be of a natural substrate such as grass, soil, clay, or a coarse sand-type material that provides good drainage and adequate footing with a cleanable, dry area for feeding.

Additionally, the following enclosure features are required: shade (trees or artificial cover, sufficient for each animal), furnishings (e.g., logs secured to allow some movement), scratching posts, a water source (such as a pool, misters, or shower), visual barriers to allow animals to get away from one another if needed, and the availability of escape routes from conspecifics. Finally, activities that provide behavioral enrichment should be considered in the design of the outside yard, such as hanging hay feeders, large brushes, and tires. Designing enrichment for these very strong and sometimes destructive creatures can be very challenging.

Personnel

Each elephant-holding facility should have established goals for its elephant management program, including a written elephant management protocol approved by the elephant management team as well as the director, CEO, or owner. This document should have at least an annual review by the entire elephant team. A protocol is an effective training tool, as well as a means to verify that the staff understands the facility's elephant management plan, including its husbandry standards, handling techniques, and safety protocols. New elephant staff should be given a copy of the protocol prior to their first day of working with the elephants, and all elephant staff must understand it and should have full access to the most recently updated version of the document at all times.

All elephant-holding facilities must make safety their highest priority. It is recommended by the AZA that a formal safety assessment program is established, and that a safety inspection occurs at least twice a year. A written record should be kept detailing each meeting, the inspection proceedings, the actions to be taken and their priority, and the date by which the changes are to be completed.

Each facility should have an elephant manager, who is directly in charge of the elephants' daily care and training and who supervises related personnel. The elephant manager should be responsible for instructing the staff in the standard methodology of elephant training and husbandry as described by each facility's elephant management protocol. The elephant management team should meet regularly to discuss relevant issues such as training, husbandry, enrichment, facility maintenance, veterinary concerns, and safety issues. Minutes of the meetings should be recorded and maintained to document any training and behavior issues or management changes. The supervisor of the elephant manager should review the meeting minutes.

Elephant keepers must be institutionally qualified, and two keepers must always be present to work with an elephant. A qualified elephant keeper is a person the facility acknowledges as a trained, responsible individual who is capable of, and experienced in, the maintenance of elephants. Each facility must determine the level of training and experience it requires of those who work with elephants, and must update those requirements as

necessary. Each facility should develop a qualification program that quantifiably assesses each keeper's knowledge of the institution's training practices, of all elephant cues and associated responses, of each elephant's behavior toward conspecifics and keepers, and of husbandry requirements.

Elephants in human care should be afforded the highest standard of treatment, and elephant holding facilities should maintain strict policies regarding their standards of elephant care.

Management Systems

The management of elephants in North America has evolved in recent years, as elephant keepers have developed new ways—or have modified old techniques—to improve the care they provide to each individual elephant. Given the wide range of facilities that house elephants, each must develop its own elephant management program based on its own specific set of circumstances. As a facility develops its program, it should consider its goals in regard to the elephants; the design of its enclosure; the experience and ability of its keepers; the number, age, gender, and demeanor of its elephants; and all its administrative directives and education, conservation, and research activities. Protocols and action plans must be developed to reflect the elephant management styles that are adopted.

Elephant management and behavior training have developed into a continuum of management techniques. These range from the keeper working immediately next to the elephant (free contact), to the keeper working with the elephant only through or from behind a barrier (protected contact), to a combination of the preceding two techniques, with a varying amount of direct physical contact between the elephant and keeper. Within a single facility, different combinations of elephant management may be used, on the basis of each elephant's disposition or the keeper's level of training. The management technique or techniques a facility uses should allow the keepers to safely meet or exceed the established minimum standards of elephant care.

When a keeper works with an elephant through or from behind a barrier (by protected contact), their physical contact is restricted to specific locations through which the elephant can extend a foot, ear, or trunk at the keeper's request. The elephant is trained to respond and change location or position through the use of targets, cues, guides, and reinforcements. This is the technique recommended for use with adult male elephants, and also with female elephants that are less tractable. It may also be established as an organization's sole management system, regardless of the elephant's disposition.

Another alternative is a program in which the keeper and the elephant share direct space (free contact). As with other approaches within the management continuum, targets and reinforcements are primary training tools; but in free contact, the keeper also

carries a guide, a tool used to teach, guide, and direct the elephant. Working with elephants in this management style therefore requires additional training and skills, and will facilitate certain activities such as the movement of highly tractable elephants from one location to another.

Many facilities operate in the middle of the management continuum. The keepers may not share the same space with the elephants, but they may have physical contact with them to differing degrees during training and husbandry care. Facilities will develop their management systems to maintain strong relationships between elephants and keepers in consideration of the temperament and the tractability of the individual elephants and the techniques and tools used for behavior modification. Ultimately, a facility should develop an approach that enables keepers to provide the best care for each individual elephant and permits a wide variety of exercises and behaviors, the ability to conduct thorough physical examinations, and the provision of medical treatment when needed.

Regardless of which type(s) of elephant management program a facility employs, it is critical that the facility management team and the elephant manager understand the need to develop a qualified, well-trained staff and a consistent elephant-training program. The elephant must be trained to be responsive to all cues given, and the keeper must be able to obtain a reliable response from the elephant. As a general rule, a keeper should not ask an animal for a behavior that they do not think it will execute. It is important to create an opportunity for success for both the keeper and the elephant. Establishing defined cues and criteria for each behavior and maintaining consistency between the different keepers who work with the elephant will help to accomplish this. Though there is a diversity of approaches, all of the methods within the management spectrum share many of the same techniques and qualities.

- All training processes use both classical and operant conditioning.
- In all approaches, the elephant's behaviors are determined by their consequences. This may be the definition of operant conditioning, and it is true of all interactions with an elephant. Desired behavior is reinforced, and undesired behavior is not.
- The training techniques and tools are interchangeable throughout the management continuum. Guides, targets, and restraints can be used by any qualified elephant keeper.
- In all approaches the success of the elephant's management depends upon a comprehensive program of staff training, an understanding of elephant behavior, and the use of proper elephant husbandry techniques, including a solid understanding of training theory and the appropriate use of training techniques.
- In all three approaches, all aspects of the management system must be evaluated constantly, including both the keeper and the elephant.

Training

Working with elephants is inherently dangerous. The elephant's sheer size and ability to use its trunk as well as the rest of its body aggressively makes it especially dangerous. People have worked with elephants for centuries and have often perceived them as "gentle giants," but the animals must be treated with respect for their unique abilities. The combination of the elephant's strength, intelligence, dexterity, and massive size makes it unique from most other animals in a zoo. The principles of training an elephant are the same as that of training any other animal. The trainer must have a strong understanding of training theory and terminology, and also of the animal's natural and individual history. Elephants are extremely intelligent, and when communicated with properly by the trainer, they can learn new behaviors very quickly. Elephants are trained for a variety of reasons including husbandry, medical procedures, education, research, exercise, and enrichment. A good elephant trainer must be well versed in the proper use of all the training tools, and must know the advantages and disadvantages of each tool.

Every elephant should respond to a minimum number of cues and stimuli in order for the trainer to properly care for it. Some of the most basic behaviors an elephant should be trained to do are as follows.

1. "Steady." Probably one of the harder behaviors to teach any animal is to stand still and do nothing. Elephants must learn to stand steady in various positions and locations so that staff can perform routine husbandry behaviors such as blood collections or baths. Most cues presented to an elephant are followed by a verbal cue of "steady," which instructs the elephant to remain in that position until released.
2. "Come" (when called). Animals need to be moved and must be responsive to trainers, especially when being trained in a group setting. The verbal cue for this behavior usually involves the elephant's name followed by the verbal cue "come here."
3. "Open" (the mouth). This is one of the first behaviors a young elephant is trained to execute. Oral inspections on elephants of all ages are a very important part of their daily care and health checks. The verbal cue for this behavior is "open."
4. "Foot." Elephants require regular foot care, and in order to receive it, they must learn to lift each foot on cue. The verbal cue for this behavior is "foot." Most facilities train the elephants to respond to the verbal cue "foot," coinciding with a visual cue of the hand gesturing towards the desired foot or the use of body positioning to indicate the desired foot.
5. "Lean in." Many elephants are trained to present the sides of their bodies, perpendicular to the trainer. This behavior allows trainers working in protected contact to inspect, scrub, and manipulate every inch of the elephant's body. The cue for this behavior includes the verbal cue "lean in" in conjunction with the trainer holding an arm outstretched in the direction where the elephant is to move its hindquarter.

These behaviors provide the foundation for more advanced ones, and enable staff to care for the elephants appropriately. Each elephant should be trained to perform all of the standard behavioral components as outlined by the AZA's Principles of Elephant Management (PEM) class, which are listed here.

- The elephant must be able to receive complete daily body exams and proper skin and foot care, including trimming and foot radiographs when needed. Elephants in a captive environment often require foot care. The nails and pads of the foot need to be trimmed on occasion. Proper skin care includes daily scrub baths, providing appropriate substrate for dusting and large objects for scratching. Staff must be able to perform daily eye, ear, mouth, and tusk exams.
- The elephant must be trained to allow for the collection of biological samples such as blood, feces, urine, saliva, trunk washes, skin biopsies, and temporal gland secretions.
- The elephant must be trained to be comfortable receiving injections, accepting oral medications, and allowing staff to treat any wounds.
- The elephant must be trained to enter and stand comfortably in a restraint device. If a restraint device is not available, the zoo staff must demonstrate the ability to restrain the elephant on tethers.
- The elephant must be weighed regularly.
- The elephants must be trained to accept rectal and transabdominal ultrasound exams, urogenital exams, and (if male) semen collection.

The staff must demonstrate the ability to manage the elephant herd's social structure. They must be able to manage social compatibility issues, introductions, calves, and the separation of animals. They must also be able to address an elephant's psychological and physiological welfare by providing it with sufficient mental stimulation, through environmental and behavioral enrichment, to promote activity and proper social behaviors, while also providing it with sufficient physical exercise to develop and maintain muscle tone, flexibility, agility, stamina, and a healthy weight.

Tools and Equipment

The management of elephants encompasses various methods and means of training. The following are the primary tools in the trainer's "toolbox" of elephant management. This list is not all-inclusive, as the different tools are simply too numerous to list. As components of elephant training and management, all tools and equipment should always be well cared for and used only for their intended purposes. All new keepers should be instructed and knowledgeable in the use of each tool prior to working with an elephant.

An elephant restraint device (ERD) restricts the elephant's movements while allowing keepers access for routine husbandry and medical care. An ERD restricts most but not all of the elephant's mobility. Although the access for husbandry and medical care

is safer when an elephant is restrained in an ERC, it is not risk-free; keepers do come into contact with the elephant and vice versa. Despite the many variations in design, certain basic elements are shared by all ERDs. A properly designed ERD should allow the keeper access to all four feet, both tusks, the trunk, the face, both ears, both sides, both hindquarters, and the back. The ERDs should be designed with multiple access doors and a moving wall to maximize access and minimize risk to both the keeper and the elephant. The ERD must open easily and quickly to free an elephant in the event of an emergency. Some ERDs are even equipped with walls that swing open to free an elephant easily if needed. The ERD should be fitted with winches and associated slings to lift and support an elephant if needed in the event of prolonged medical treatments where the elephant's health is compromised. It should also be able to comfortably contain an elephant for extended periods of time should the need arise for an ongoing or lengthy medical or husbandry procedure. Most importantly, it must be able to contain the facility's largest elephant safely. It should be located in an area of the holding facility where it is routinely accessible to the elephant and where it can be used 365 days a year regardless of weather conditions. Preferably the ERD should be placed in an aisle, so that each elephant must go through it every day to access its outside yard or another space within the facility.

A guide (ankus) is a tool used to teach, guide, and direct the elephant into the proper position or to reinforce a verbal cue. The tip of the guide consists of a point and hook mounted on one end of a shaft made of fiberglass, plastic, or wood. The design of the hook allows for the elephant to be physically cued with either a pushing or pulling motion. The point and hook are tapered to elicit the proper responses from the elephant efficiently, with the keeper exerting very little pressure. The end of the hook should not tear or penetrate the skin. The guide provides the elephant with additional information and is intended to complement verbal cues. It is an aversive stimulus from which the animal is conditioned to move away. When training the behavior "move up," a keeper would give the verbal cue "move up" and touch the elephant behind the front leg to initiate movement. Once the elephant starts to move, the pressure from the guide ceases and the elephant is given positive reinforcement. The ultimate goal of the elephant keeper is to have the elephant respond to verbal cues alone, using the guide as little as possible. When paired with verbal cues, the guide can be used to teach an elephant a variety of behaviors including lifting a leg, moving forward, and moving backward.

A target is another tool used in the behavior modification of elephants. It differs from the guide in that the animal is conditioned to move toward it rather than away from it. Once the animal is trained to initiate contact with it, a target can be a very effective tool for training new behaviors. A target is typically a pole with a consistent and defining feature on the end that is presented to the elephant. The

Box 30.1. Elephant Endotheliotropic Herpesvirus (EEHV)

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Elephant endotheliotropic herpesvirus (EEHV) is an infectious and often fatal disease that attacks the cells that line blood vessels (endothelial cells), causing widespread hemorrhaging. EEHV primarily targets juvenile elephants and has been detected in both Asian and African elephants. There have been approximately 40 confirmed clinical cases of EEHV in North America, including 37 in Asian elephants and 3 in African elephants. Twenty-nine of the 40 cases resulted in death. Of these 29 cases, only 2 were African elephant deaths. Confirmed cases resulting in death have also been discovered in wild populations in Thailand, India, and Cambodia. The total impact of EEHV on wild populations at this time is unknown, but these findings prove that EEHV is not just a disease found in captivity.

EEHV is a beta herpesvirus. There are eight known types of EEHV: EEHV1A, EEHV1B, EEHV2, EEHV3, EEHV4, EEHV5, EEHV6, and EEHV7. Of the eight types, five have been confirmed as causing death, with EEHV1A and EEHV1B as the most common types associated with the fatal disease in North America. The transmission route of the virus is still unknown, but current research has found EEHV in trunk wash secretions from Asian elephants in zoos that have not demonstrated symptoms (i.e., that are asymptomatic carriers).

EEHV infection manifests very rapidly, and death can occur within hours of observation of the first clinical symptoms. Those symptoms include, but are not limited to, lethargy; colic; low numbers of circulating red blood cells (anemia); blue-purple discoloration (cyanosis) of the tongue; swelling of the head, neck, and limbs (edema); lameness; and not eating (anorexia). Elephant care professionals should carefully monitor any change in a juvenile elephant's behavior or appearance. Infection is confirmed with a polymerase chain reaction (PCR) test that detects herpesvirus DNA in an elephant's whole blood. Early detection of EEHV is imperative. Elephant care professionals who suspect an EEHV infection should not wait for a diagnostic confirmation to start treatment. Aggressive supportive care and antiviral drug therapy are recommended. Historically, there has been some success using the antiviral drug Fanciclovir. More recently, the drug Ganciclovir has been used successfully to treat two elephants.

Researchers, elephant care professionals, and veterinarians are trying to find answers to the many unknown questions surrounding EEHV. EEHV research has become a worldwide effort involving zoos, private elephant owners, and in situ and ex situ research facilities. The development of a vaccine for EEHV is a long-term research goal. A vaccine would have a major impact on both captive and wild elephant populations.

end that is presented as the "target" to the elephant may have a differently shaped object attached to it, or a painted tip. Targeting is an effective way to manage and manipulate less tractable elephants. There is potential for the target to be grabbed and eaten by the elephant. Therefore, consideration should be given to the material selected as the target, to minimize harm if it is ingested.

Leg restraints or tethers are an acceptable, necessary, and useful tool in the management of captive elephants. They provide a means to limit an elephant's movements and permit safer handling. This can facilitate footwork, feeding, veterinary procedures, transportation, introductions, parturition, scientific investigation, training of new keepers, and training of new behaviors. Tethering is just one component of an elephant management program. The decision to tether should be made taking into consideration the best interest of the elephant. Elephants should not be tethered for most of a 24-hour day. Elephants under medical care, in transit, or with other special circumstances may need to be tethered for longer periods. Elephants that require prolonged tethering with chains should have their leg chains wrapped in fire hose or leather to provide protection from abrasion. Elephant keepers should be well versed in the various and proper uses of ropes, chains, and hardware such as shackles (clevises) and cold shuts. All facilities should develop tethering protocols and all elephant keepers should be familiar with them. This will ensure that the tethers are used correctly, efficiently, and humanely.

An up-to-date elephant profile should be kept on file for each elephant maintained by a facility. The purpose of an elephant profile is to track a specific elephant's history, record training data, provide reproductive information, and, most importantly, identify behavior trends in relation to the elephant's keepers and male and female conspecifics.

Conservation Status

The conservation status of each elephant species is published in the current International Union for Conservation of Nature (IUCN) Red Data List, in US Fish and Wildlife Service (USFWS) listings and by the Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES). Wild population status is estimated by the IUCN/ Species Survival Commission (SSC) African Elephant Specialist Group and the Asian Elephant Specialist Group.

Populations of both elephant species continue to decline in the wild (IUCN 2010). Human encroachment, habitat loss, and poaching pose major threats to the extant populations. Human-elephant conflicts are frequent, as the population of humans increases and suitable habitat for elephants decreases. Human or elephant fatalities are often the result.

Asian elephants have disappeared entirely from western Asia, Iran, and most of China. Remaining

populations are usually restricted to hilly and mountainous areas. It is estimated that at the turn of this century there were more than 100,000 elephants in Asia. The number of Asian elephants surviving today is estimated at between 41,000 and 52,000. Loss of habitat is the primary reason for the decline of the Asian elephant, as migration routes have been disrupted and new settlements and agriculture confront herds; resultant conflicts with humans are inevitable (IUCN 2010). *Elephas maximus* is listed as an endangered species with the USFWS, and is classified under Appendix I with CITES.

African elephants once ranged throughout Africa. By the 16th century the species had become extinct in northern Africa, primarily due to the ivory trade. Much of the population that survives today is fragmented by human activities that disturb the elephants' traditional migratory routes. The population of this elephant, estimated to be at about 1.3 million in the early 1970s, dropped by more than half by 1995 (IUCN 2010). In 1989 the African elephant was listed as Appendix I (endangered) by CITES due to uncontrolled poaching, and consequently an international trade ban on elephants and elephant products was enacted. In 1997 the African elephant was downlisted by CITES to Appendix II in some southern African countries, as a result of rebounding populations and protection programs. This remains the case today. Appendix II classifies these populations as threatened and allows some limited trade in elephant products with certain restrictions, quotas, and permits. Today the African elephant population is optimistically placed at near 500,000 by some, but census analysis by the IUCN African Elephant Specialist Group suggests that the true numbers may be lower.

Summary

The purpose of this chapter is to provide the entry-level keeper with a basic overview of the care and management of elephants in human care at zoological facilities. In addition to this information, there are some basic skills that everyone must possess in order to be a successful elephant keeper:

- *Ability to communicate with others.* A team approach is necessary for a successful elephant program. The ability to communicate is more than being able to express one's thoughts in a concise, logical manner. A keeper must also be able to listen to others, both peers and supervisors, with respect and consideration even when their views differ.
- *A working knowledge of operant conditioning.* Operant conditioning is a type of learning in which the probability of a behavior recurring is increased or decreased by the consequences that follow.
- *Excellent problem-solving skills.* The ability to use the scientific method and critical thinking must be developed to solve training issues.
- *Ability to educate.* One goal of every zoo is to educate its guests on conservation issues. Every keeper needs to be able to speak to the public each day to meet this mission.

- *Ability and willingness to work hard.* An elephant can eat and defecate 200 pounds per day. Its living area needs to be cleaned, disinfected, raked, and scrubbed on daily basis. Because of the animal's size, every maintenance task is larger than life: bathing, foot care, and so on. Every task is important, from cleaning the elephant to cleaning the shovels and rakes used every day.

These are just a few of the skills needed by a successful elephant keeper. If someone is seriously considering a career as an elephant keeper (or as any kind of animal keeper), the authors would encourage them to try to find an institution that accepts animal care volunteers. This would give the person an opportunity to see and experience the profession.

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Announcement

ICE 2016 - International Congress of Entomology, 25th - 30th September 2016, Florida, USA



The latest global entomological research will be presented under the theme "Entomology without Borders" during the XXV International Congress of Entomology, September 25-30, 2016, in Orlando, Florida, USA. It will emphasize the global impact of entomology along with a multidisciplinary approach to explore and expand our scientific frontiers. ICE 2016 will be the largest gathering of scientists and experts in the history of the discipline, with an expected attendance of over 6,000 individuals. The scientific program of ICE 2016 will feature a variety of sessions including plenary sessions, symposia, 15-minute papers and poster sessions. There are 30 sections covering a range of topics. 287 symposia have been accepted under the different sections from the global entomological community. The symposia will highlight the most recent advances in a wide diversity of entomological subjects around the global theme during this six-day event.

Under the section, "Apidology, Sericulture and Social Insects", the symposium with the following details has been accepted.

Title: **Insects and Ecosystem Services with Special Reference to Pollination Biology**

The themes of the symposium are 1. Insect pollinators and plant propagation 2. Insect products for human welfare 3. Butterfly parks and ecotourism aspects. This symposium will address the theme of beneficial insects and ecosystem services. The symposium will highlight insects as friends of humankind.

The symposium can have 3 sessions one hour each with oral and poster presentations. The oral presentations can be of 15 minutes each. Abstracts must be written in English and with 250 words or less and providing key words. Please add your address and mail ID for correspondence. The abstracts may be sent to the email ID okremadevi@gmail.com within a month.

For more details contact Dr. O.K. RAMADEVI, Symposium Organiser, ICE, 2016 at okremadevi@gmail.com You can also visit the website: <http://ice2016orlando.org> for more details.